Imagine two cones joined together at their small ends like an hourglass, and that a solid of such a shape and size is turned out of walnut or cherry or boxwood or of ebony or ivory : this is the devil. Now take the last half-yard from the taper ends of two billiard-sticks, and let them be connected from these ends by a limp silken cord or string half a yard long these are the sticks.

To play the game hold the thick ends of the sticks one in each hand, bring the cord under the narrow neck of the solid and try to elevate it in the air : it drops directly on the grass. If a brisk rotary motion is given to it however, it will not only remain on the cord, but several dexterous manœuvres may be accomplished with it : the variety of which and the skill displayed in performing them constitute the game. To produce the revolutions the sticks are moved rapidly up and down alternately, and when the spinning is once established, "Diabolus" may be allowed to run up and down the stick, or he may be projected high up in the air, and, still spinning all the while, be caught on the cord again and again in rapid succession. Two may be engaged in the same game. It was fashionable many years since in these parts, and I recollect seeing a picture in a Tunbridge-ware shop in this place of the lords and ladies engaged in playing this game on the Pantiles at Tunbridge Wells more than half a century ago. JOHN GORHAM

Bordyke Lodge, Tunbridge, June 4

[This is a nearly complete answer to our correspondent's query. The behaviour of the "devil" is an excellent example of that property of the axis of greatest or least moment of inertia of a body which is utilised in a well-thrown quoit or an elongated rifle-bullet. The mode of producing the rotation is easy to learn by trial, but not very easy to describe. The sticks are kept moving so that one end of the cord is always at a greater tension than the other.—ED.]

Channel Ballooning

As I have shown in my pamphlet, "Les Grands Ascensions Maritimes," the British Channel is the proper field for trying maritime ascents and determining which are the best means for rendering balloons serviceable on sea as well as on land. I have had several conversations with Lhoste, my aëronautical pupil, on the circumstances of his audacious trip. I will confine myself to the scientific teaching of this expedition.

The cone anchor was lowered by Lhoste when he saw that the *Noëmi* was running after the balloon, and diminished so much the velocity of the run that it was possible to catch him with a rowing boat. But although the wind was rather mild, the balloon inclined so much that the car was plunged into the water, and the waves drenched the occupant. It is evident that in stormy weather the lowering of the cone anchor would lead to the destruction of the balloon by pressure of the wind. To avoid this it is necessary to reserve the cone anchor for ordinary winds, and to use in other circumstances guide-ropes with wooden nuts passed through them in order to increase friction as much as possible.

The balloon went to the great altitude of 15,000 feet through the activity of the sun, which can be resisted very easily by taking some litres of water out of the sea, when nearing it, with a very simple apparatus that Lhoste has invented.

Any balloon attempting to cross the Channel should be bound to take on board half a dozen carrier pigeons to indicate the place where it has anchored, or has been rescued or landed, so that help could be sent to it without any delay. With such easy precautions, and the throwing out of a sufficient number of pilot balloons, the experiments can be conducted on scientific principles, and exert the most useful influence on the study of aërial currents on these seas, where several such currents combine, and where the constitution of the air is so peculiar that mirages of every description have been frequently seen even at the present season.

Lhoste, on the morning of June 9, saw at an altitude of 1200 feet a regular halo, which surrounded the sun. The fog was so heavy that he could not see the sea, except when it was almost ready to send him to a watery grave. The steam whistling from vessels in different seaports, reached him at every altitude; but he did not know what was the cause of the extraordinary noise.

If it had not been for the fog, Lhoste would have succeeded in a scientific sport which will become fashionable, and ultimately lead astronomy to try the air, and to trust to the winds in spite of Shakespeare.

Lhoste's audacity seems to have given rise to a competition in the Mediterranean from Marseilles, but I believe that the Mediterranean must only be tried when the British Channel has been traversed without difficulty in every direction, and that this part of the ocean will play an important part in the development of aërial navigation in the second century of its existence.

Boulogne, June 17 W. DE FONVIELLE

Geology of Cephalonia

CAN any of your readers kindly inform me whether geological investigations were ever made in the island of Cephalonia, one of the Ionian Islands that were under British protection up to the year 1863?

The following are the names of the fossils that I have been able to determine out of those that were given to me and brought last year from Climatzias, Thermanti, and Leacas, localities in the neighbourhood of Mount Cephalos, in the island of Cephalonia :—

Mitra fusiformis, Brocc.
M. Bronni, Mich.
M. Michelotii, Hörnes.
Buccinum costulatum, Brocc.
B. prismaticum, Brocc.
Chenopus pes pelecani, Phil.
Triton Tarbellianum, Grat.
T. corrugatum, Lam.
Murex spinicosta, Bronn.
Murex ——
Murex ——
Fusus mitræformis, Brocc.
F. virgineus, Grat.
F. longirostris, Brocc.
Turbinella subreticulata, d'Orb.
Cerithium ——
Turritella turris, Bast.
Turritella ——
Turritella subangulata, Brocc.
Vermetus intortus, Lam.
Natica millepunctata, Lam.
Natica ——
Dentalium ——
Venus multilamella, Lam.
V. plicata, Gmel.
Chama gryphoides, Linn.
Cardita Jouanneti, Bast.
Pectunculus pilosus, Linn.
Limopsis calabra, Seguenza.

Bucuresti (Roumania), June 2 J. P. LICHERDOPOL

Lightning Phenomenon

WHILE watching the incessant play of vivid lightning during the progress of a thunderstorm which was raging close by in the country towards Novara, Arona being just on the northern limit, my wife observed the following curious spectacle, the account of which she wrote down immediately afterwards :—At 9.35 p.m. on Sunday, June 3, a meteor-like object was seen to pass apparently from south to north (window facing due east), coming from the side of the storm and disappearing behind a mass of cloud which capped the high hill of Monte Val Grande above Lago Varese. It was oblately spheroid in form and apparently about the size of a fire-balloon, and with the velocity of a rocket was travelling slowly, for it left no visible track. It was of a bright, clear, whitish yellow, with a bright, pale green colour showing on the northern side when it passed behind the dark cloud. It was about three times as high above the horizon as the low hills opposite Arona, and traversed an angle of 45° horizontally from the point where first seen to its disappearance. The next day (June 4) when visiting friends at the Villa Frauzosine, near Tutra, we ascertained that this meteor-like body had also been seen by two or three persons who were sitting on a terrace watching the brilliant lightning to the south; they observed it moving also from south to north, disappearing behind the mountains to the northward. W. H. GODWIN-AUSTEN

Waterspout

ON April 28 last the Cunard steamship *Servia*, in making her outward voyage to New York, fell in with several small waterspouts. Being on deck at the time I made a rough sketch and some notes of the occurrence, which I now venture to send you, having learned that many officers of these steamers have sailed the North Atlantic for years without having witnessed any similar phenomenon there. The ship's position may be easily deduced from the fact that her latitude was 42° 24′ and longitude 51° 3′ at noon on the 27th, while these were 41° 42′ and 59° 53′ respectively at noon on the 28th, at 8.30 a.m. of which day we met the waterspouts. There was hardly any wind at the time, and

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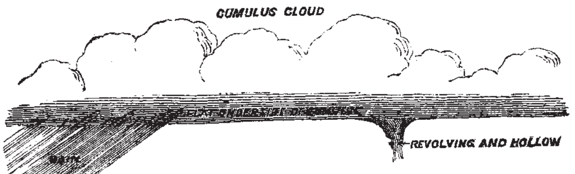
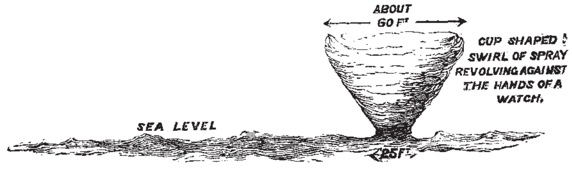
the sky, which had been generally overcast, was rapidly breaking up into masses of cumulus clouds separated by wide spaces of blue. About a dozen waterspouts were seen in all, the ship passing right through one of them and thus enabling me to estimate its diameter by direct comparison with the known beam of the *Servia*.

The swirls of spray rose from the sea in a cup-like shape, and revolving rapidly in a direction opposite to that of the hands of a watch. It was only after such a swirl had become well defined that the lower surface of the cumulus cloud above it began to descend as if to meet it, spinning at the same time. Indeed, so inconspicuous was this feature of the phenomenon that many of the passengers, intent on watching the spray-cups sparkling brightly in the sunshine, failed to notice it at all. In no case did the cloud swirl nearly meet the sea swirl, nor did the double-funneled stem of whirling mist, so generally shown in books, appear. Some spray fell heavily on deck from the swirl through which the *Servia* passed, but the wind, which struck us at one moment on this, at the other on that, side of the face was not brisk enough to carry off any one's hat. The sight was remarkably beautiful whether closely or distantly viewed. In the one case the spray-cup seemed made of rustling jewels which sparkled in the bright sunshine; in the other, the sea horizon appeared as if here and there set with boiling and steaming caldrons, whose rope-like handles hung from the dark undersides of white billowy clouds. D. PIDGEON




ABOUT
60 F^T
CUP SHAPED SWIRL OF SPRAY REVOLVING AGAINST THE HANDS OF A WATCH.
SEA LEVEL
25 F^T

Hartford, Mass., U.S.A., May 22

Meteors of June 3

THE large meteor seen by Mr. Hall and others (NATURE, vol. xxviii. pp. 126, 150) was also observed here by Mr. Paul Mathews and myself. We estimated the length of its path while visible as 120° with the middle part due east, the direction of its motion as parallel to the horizon, elevation as 20°, and length of tail as 25°; its apparent brilliance I put at six times, Mr. Mathews at twice, the greatest brilliance of Venus, and the pieces into which it broke up (about six in number) as equal to the brightest planets. The time I should have put at 10.50, but did not note it (Mr. Mathews 10.40 to 10.45). The colour was golden. This was moreover in a very clear and brilliant sky, as about 10 we had observed that the light in the east was so intense that it cast quite a dark shadow as we passed through a somewhat shady part of the road.

Ripon W. W. TAYLOR

IN the correspondence on the large meteor seen on June 3 I have not seen any notice of another curious meteor seen later on the same night. A flash of light in the sky drew attention to it, and when first seen it was moving in nearly a straight line from 102 Herculis to α Aquilæ. In five seconds it travelled slightly more than half the distance to the latter star, and then disappeared without any outburst. It was about a lunar diameter in length, and between 3′ and 4′ wide at the widest part, a point distant one-third of its entire length from the head. In fact it was not at all unlike a comet with a bushy tail tapering off to a point. The colour was a pale yellow. P. F. D.

London, W.

Intelligence in Animals

SOME years since, when calling on the late Hon. Marmaduke Maxwell of Terregles, our conversation happened to turn on the subject of intelligence and instinct of animals. Mr. Maxwell said if I would walk down to the stables with him he would show me a curious instance. On reaching the stable he pointed out an empty stall in which five well grown young rats were running about—a board had been fixed at the end of the stall to prevent the rats getting out. Some time before the cat had a litter of five kittens, *three* were taken from her and drowned; the following morning it was found she had brought in *three* young rats, which she suckled with the two kittens that had been left; a few days afterwards the *two* kittens were destroyed, and the next morning it was found the cat had brought in *two* more young rats. While we were looking at this strange foster family the cat came into the stable, jumped over the board and lay down, when the rats at once ran under her and commenced sucking. What makes the matter the more singular is, the coachman told me the cat was a particularly good ratter, and was kept in the stable for the purpose of keeping down rats.

Cargen, Dumfries P. DUDGEON

AMERICAN ETHNOLOGY[1]

UNDER the able management of Major J. W. Powell the Bureau of Ethnology, recently attached to the Smithsonian Institution, has already done much useful work in the wide field of American anthropology. This first annual report, however, of its proceedings for the year ending July, 1880, appears to be somewhat behind time for, although bearing on the title-page the date of 1881, it was not issued to the public till the beginning of the present year. But the delay is doubtless due to the large amount of preliminary work required to be got through in organising the department, and future reports may be expected to appear more punctually. The title, "Annual Report," is itself somewhat misleading, the actual report of the director really occupying no more than thirty-three introductory pages, and consisting mainly of a digest of the rich materials filling a large quarto volume of over 600 pages. Hence this is, strictly speaking, a first volume of the *Proceedings* or *Transactions* of the Bureau, and as such gives fair promise of a long and useful career in an anthropological domain which may be regarded as practically unlimited.

From the director's introductory remarks we gather that, after the fusion in 1879 of the various geological and geographical surveys in the general "United States Geological Survey," the Bureau of Ethnology was created and attached to the Smithsonian Institution for the purpose of continuing the anthropological work which had hitherto been prosecuted in a somewhat desultory way by those Surveys. The management of this newly-organised department was intrusted to Major Powell, who, as former Director of the Survey of the Rocky Mountain Region, had already shown special aptitude for ethnological investigation. The direct object of the Bureau, we are told, is to systematise anthropological research in America, and this it is proposed to effect both by the prosecution of research through the direct employment of students and specialists, and by the general encouragement and guidance of original observers co-operating throughout the continent. "It has been the effort of the Bureau to prosecute work in the various branches of North American anthropology on a systematic plan, so that every important field should be cultivated, limited only by the amount appropriated by Congress" (xiv.).

How closely this wide programme has been so far adhered to is evident from the varied contents of this

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[1] "First Annual Report of the Bureau of Ethnology, Smithsonian Institution, 1879-80." By J. W. Powell, Director. (Washington Government Printing Office, 1881).

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